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REMARKS

In the most recent office action Examiner rejected claims 3-14 as being anticipated by Huish et al. and Trulaske et al. He then rejected claims 3-14 as being obvious over Huish or Trulaske in view of Shyu. Further, he rejected claims 3-14 under 35 U.S.C § 112, 1st paragraph, on the grounds that it was unclear from the specification how field intensity could define the distance of the user from the receiver. He also requested that FIGURE 1 be designated by a legend as "prior art".

Applicant has enclosed here with a request for continued examination and the appropriate fee. By this amendment and response Applicant has amended pending Claims 3 and 10 and has canceled Claims 9 and 11. Also enclosed herewith is drawing page 1 of 3 in which new FIGURE 1 which has been corrected as requested by the examiner to include the legend "prior art." A marked up version of that FIGURE in which the proposed correction is shown in red is also included.

Following the Examiner's rejection 35 U.S.C § 112, Applicant is enclosing herewith copies of pages 265-267 from a text entitled *Applied Electromagnets*. From that information and the discussion in the specification beginning on page 3 and line 24, it appears that the relationship between electromagnetic field intensity and the distance from the source of the field is well known. It also appears that one of ordinary skill would understand how field intensity can be used to calculate the distance between transmitter 23 and receiver 25 in FIGURE 2 and to define the position of the user on the treadmill belt if the system was calibrated from a known user position.

Regarding the rejection based on Huish, that patent describes an apparatus for cardio-pulmonary interval training which is automatically controlled to cause the user's heart rate to




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move between high and low targeted heart rates to produce such interval training. The heart rate of the user may be monitored by a number of means including the handgrip detectors shown in FIGURES 1 and 2 of the patent. Alternately, it may be detected by a chest strap heart rate detector which is in wireless communication with a receiver connected to microprocessor 25. Both the speed and elevation of the belt can be increased or decreased to increase or decrease the load to the user and thereby increase or decrease the user's heart rate. When the user's actual heart rate reaches the high target rate the load is automatically decreased causing his heart rate to fall until the low target rate is reached. This cyclical loading is continued for the workout period selected by the user. See Huish, column 3 lines 6-33, column 4 lines 13-67.

While the means for detecting heart rate described in the present application and the alternative embodiment of Huish are similar, there is a very significant difference in the means by which the respective exercise devices are controlled. In the present invention according to amended independent Claims 3 and 10 it is clear that the endless belt is adjusted (or controlled) in response to the field strength of the signal emanating from the transmitter. Specifically, according to Claim 3 the claimed apparatus includes "means... for producing a control signal responsive to the field strength; and means... responsive to the control signal for adjusting the belt." More specifically, Claim 10 includes "a transmitter attachable to a user... for generating an electromagnetic signal...; at least one receiver attached to the treadmill for receiving the signal; at least one microprocessor for detecting the field strength and for producing a control signal responsive to the field strength; and an apparatus responsive to the control signal for adjusting the belt."

In contrast, the Huish treadmill is clearly controlled in response to the programmed microprocessor and by the user's actual heart rate. There is no showing or suggestion anywhere



in Huish that the treadmill load (i.e. the speed and/or elevation of the treadmill) is or should be controlled by the position of user on the treadmill. Although both the present invention and Huish may include a heart rate monitor the respective control functions upon which they rely are completely independent. The present invention relies upon the field strength of the carrier wave of the heart rate monitor whereas Huish relies upon the heart rate information detectable from the modulated carrier.

The examiner has stated that when the user in Huish is beyond the range of the receiver, no signal would be received and therefore that the receiver is responsive to the position of the user on the endless belt. Applicant believes that this aspect of the Examiner's rejection has been obviated by the limitation in amended Claims 3 and 10 requiring that the electromagnetic signal generated by the transmitter be "detectable by a receiver." *Huish still detects* Moreover, those amended claims further require that the invention include means for detecting the strength of the electromagnetic *on-off strength* signal, but Huish does not appear to include any such means. Accordingly, Applicant contends that invention according to amended claims 3-14 is not anticipated by Huish.

Trulaske discloses an exercise device, preferably a treadmill, which includes means for controlling the heart rate of the user with respect to a pre-determined heart rate. It also includes detection circuitry for sensing and averaging the actual heartbeat of the user and providing a control signal corresponding to that heartbeat. In one embodiment of the invention the target heart rate is selected at the initiation of operation by the user, whereas in the second embodiment the target rate is determined from the user's current actual heart rate after the user has been exercising for a period of time. As with most modern treadmills, Trulaske's treadmill incorporates two resistance mechanisms which can be varied independently to alter the load on




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the user. Particularly, it includes a mechanism for varying the speed of the treadmill belt and a second mechanism for adjusting the grade or inclination of the belt.

In order to maintain the heart rate of the user at the target value the resistance levels of the resistance mechanisms are varied with respect to one another depending upon the user's actual average heart rate. Preferably the heart rate detection circuitry employed in this device includes a telemetry type electrocardiograph transmitter attached to the user by the user by a chest belt. The belt includes a transducer for sensing the user's heart rate, an amplifier, and a transmitter. A signal including the heart rate information is transmitted by the transmitter to a receiver mounted on the treadmill. The received information is then further transmitted to a controller in which the user's actual average heart rate is computed and is used to obtain a control signal to operate the treadmill belt speed and inclination mechanisms.

Accordingly, the Trulaske treadmill is similar to Huish in that it utilizes the user's heartbeat to control treadmill speed and inclination, but as with Huish it differs significantly from the present invention in the means it employs to control treadmill operation. In contrast to Trulaske, the present invention detects the field strength of the signal transmitted from the heart rate monitor and generates a control signal responsive to variations in the field strength to control the speed and inclination of the treadmill belt. Particularly, both independent claims 3 and 10 include means for detecting signal strength and for producing a control signal responsive to the field strength. Trulaske neither discloses or suggests such means. Accordingly, applicants would show that the present invention is not anticipated by Trulaske et al.

Finally, the Examiner contends that the present invention would be obvious on the basis of either Huish et al. or Trulaske et al. in view of Shyu. Applicant would agree that the prior art discloses a number ways to detect the position of a user on a treadmill but disagrees at any

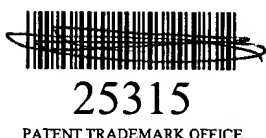


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combination of the teachings of these three references disclosed the present invention. As discussed in connection with the previous Office Action, Shyu discloses a treadmill in which the rotational speed of the belt is controlled in response to the position of the user on the belt. The user's position is determined by comparing an ultrasonic wave transmitted from the controller portion of the treadmill to the reflected wave from the user's chest. Applicant assumes from Examiner's comments that he is suggesting that Huish or Trulaske could be modified by including Shyu's position measuring system to obtain the present invention. It is clear from Huish and Trulaske that an important aspect of both inventions is the controlling of resistance to the user, particularly treadmill speed, in response to the user's heart rate. Shyu's belt speed control system is not in any way related to user's heart beat and therefore would appear to teach away from the concepts taught by Huish and Trulaske. Accordingly, Applicant believes that the modifications suggested by the Examiner would be undesirable. Moreover, there is no teaching or suggestion in any of these references that such combination would be beneficial or desirable. It is understood that obviousness cannot be established by the combined teachings of the prior art to produce the claimed invention absent some teaching, suggestion, or incentive within the references supporting the combination. *in re. Geiger* 2 U.S.P. Q 2nd 1276 (Fed Cir 1987). Accordingly, Applicant contends that the present invention would not be obvious on the basis of Huish or Trulaske in view of Shyu.

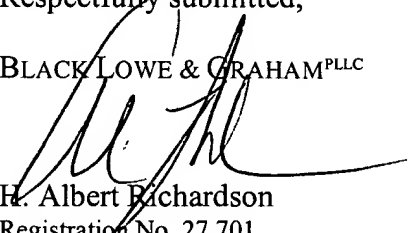
In summary, the Applicant believes that none of the references cited by the Examiner, either singularly or in combination, disclose or suggest the invention now claimed and that the invention is patentable over all prior art cited by the Examiner or known to the Applicant. Accordingly, the Applicant requests that the Examiner re-examine this application in view of the



above amendments and remarks, withdraw all rejections and objections of record, and allow each of the claims now proposed.

Respectfully submitted,

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